Recent trends in incidence and survival of non-invasive brain tumours in Northern Ireland

(A comparison between April-December of 2021, 2020 and 2018-2019)

Further information

Further information is available at: www.qub.ac.uk/research-centres/nicr

Phone: +44 (0)28 9097 6028 **e-mail:** nicr@qub.ac.uk

Acknowledgements

The Northern Ireland Cancer Registry (NICR) uses data provided by patients and collected by the health service as part of their care and support.

NICR is funded by the Public Health Agency and is based in Queen's University, Belfast.

INCIDENCE

During the April-December period the number of cases of non-invasive brain tumours diagnosed decreased between 2018-2019 and 2021 by 21.1% from 190 cases per year to 150 cases.

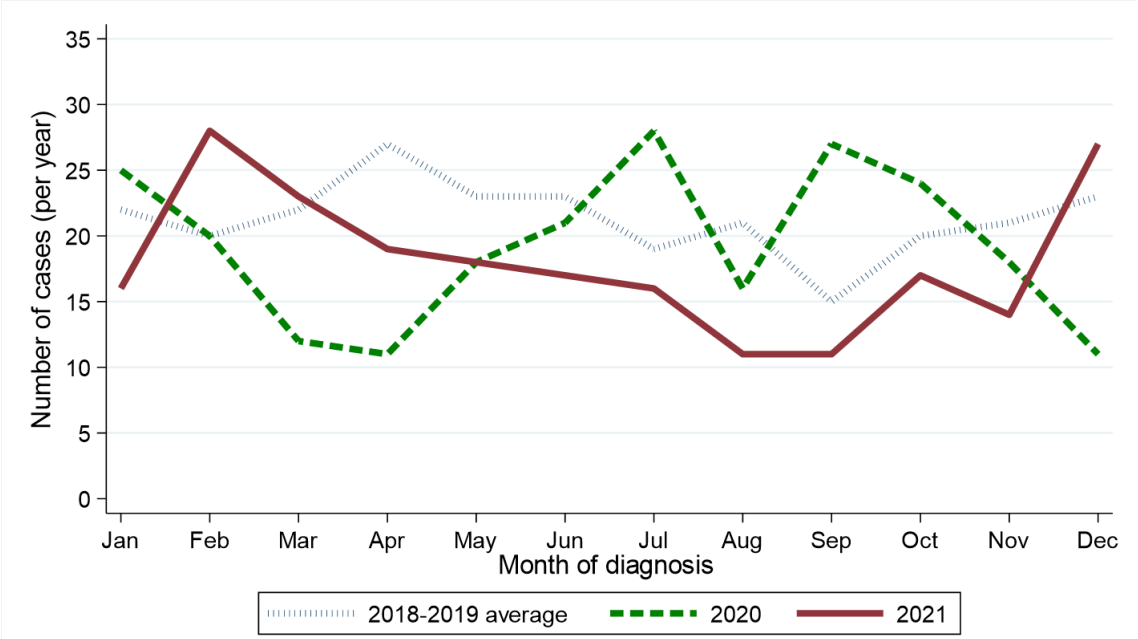
Table 1: Number of non-invasive brain tumour cases diagnosed in 2018-2021 by month and year of diagnosis

Period of diagnosis	Annual total	Month diagnosed											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	253	22	20	22	27	23	23	19	21	15	20	21	23
2020	231	25	20	12	11	18	21	28	16	27	24	18	11
2021	217	16	28	23	19	18	17	16	11	11	17	14	27

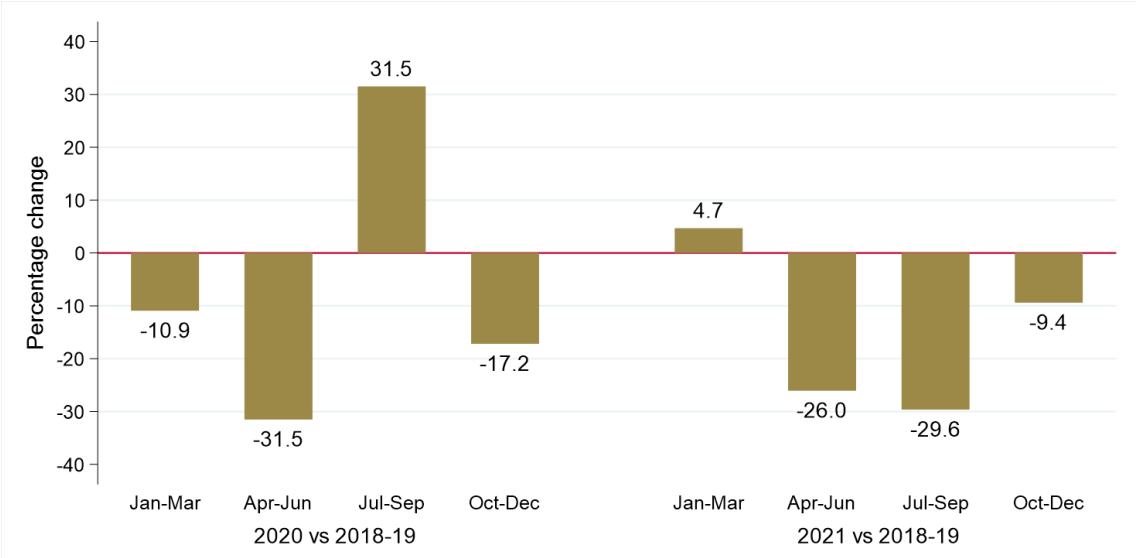
** Average cases per year rounded to the nearest integer. Row sums may thus differ slightly from the total.*

Figure 1: Number of non-invasive brain tumour cases diagnosed in 2018-2021 by month/quarter and year of diagnosis

(a) Number of cases diagnosed by month of diagnosis



(b) Percentage change over time in number of cases by quarter of diagnosis



GENDER

Excluding the first quarter of each year the number of male non-invasive brain tumour cases diagnosed decreased by 20.8% from 72 per year in 2018-2019 to 57 in 2021. Between the same two time periods the number of female non-invasive brain tumour cases diagnosed decreased by 21.2% from 118 per year in 2018-2019 to 93 in 2021. The change in case distribution by gender between 2018-2019 and 2021 was not statistically significant.

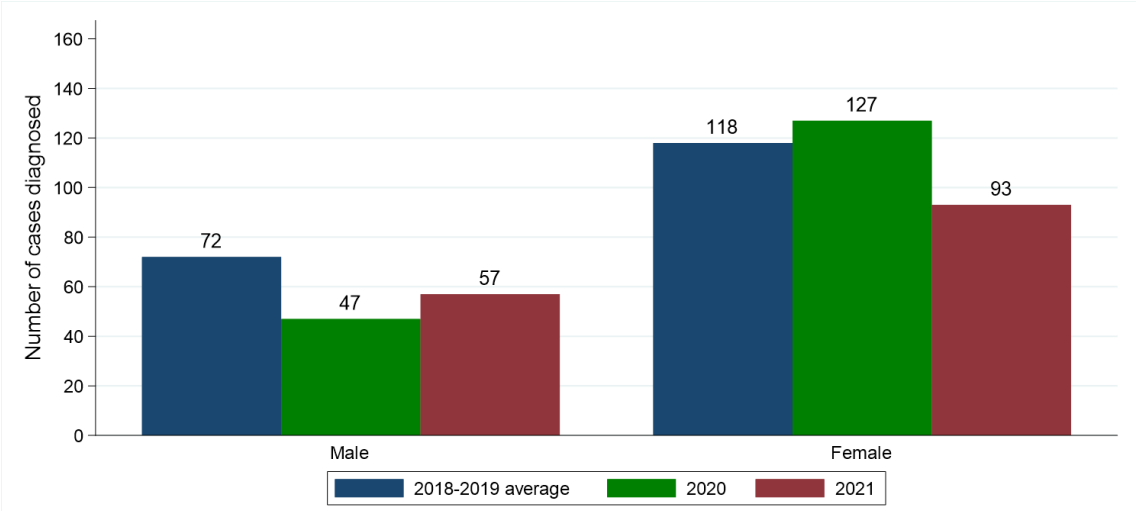
Table 2: Number and proportion of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis

Gender	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All persons	190	174	150	-8.4%	-21.1%
Male	72 (37.9%)	47 (27.0%)	57 (38.0%)	-34.7%	-20.8%
Female	118 (62.1%)	127 (73.0%)	93 (62.0%)	+7.6%	-21.2%

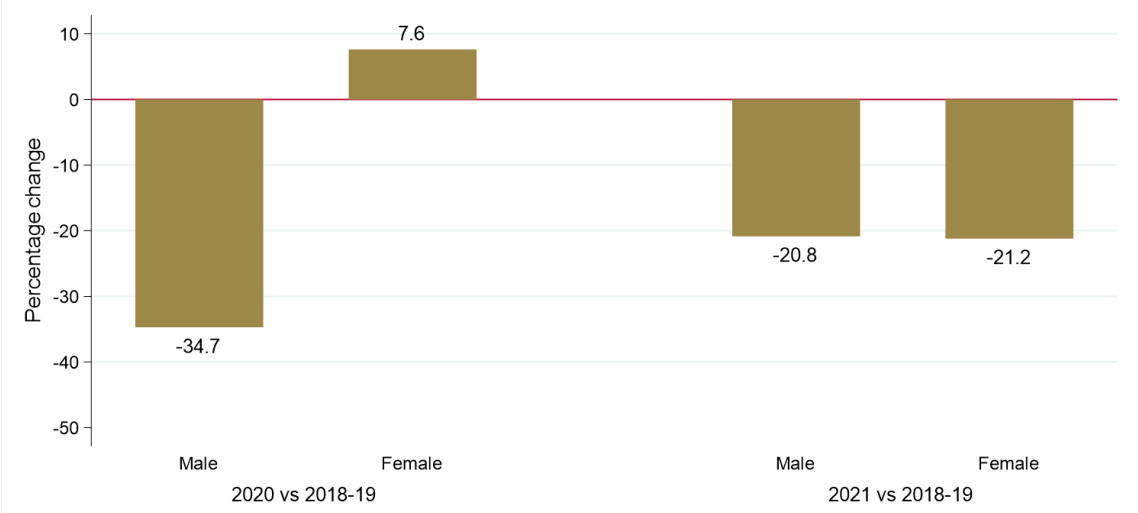
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 2: Number of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis

(a) Number of cases diagnosed



(b) Percentage change over time in number of cases



AGE

Excluding the first quarter of each year the number of cases of non-invasive brain tumours diagnosed among those aged 65 to 74 decreased by 28.6% from 42 per year in 2018-2019 to 30 in 2021. Between the same two time periods the number of cases of non-invasive brain tumours diagnosed among those aged 0 to 54 decreased by 16.7% from 54 per year in 2018-2019 to 45 in 2021. The change in case distribution by age between 2018-2019 and 2021 was not statistically significant.

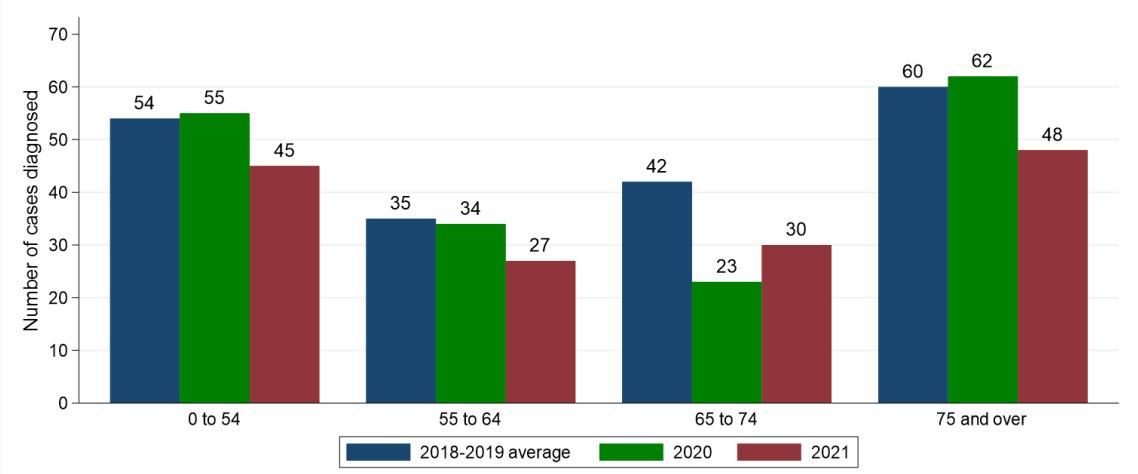
Table 3: Number and proportion of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by age and period of diagnosis

Age	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All ages	190	174	150	-8.4%	-21.1%
0 to 54	54 (28.4%)	55 (31.6%)	45 (30.0%)	+1.9%	-16.7%
55 to 64	35 (18.4%)	34 (19.5%)	27 (18.0%)	-2.9%	-22.9%
65 to 74	42 (22.1%)	23 (13.2%)	30 (20.0%)	-45.2%	-28.6%
75 and over	60 (31.6%)	62 (35.6%)	48 (32.0%)	+3.3%	-20.0%

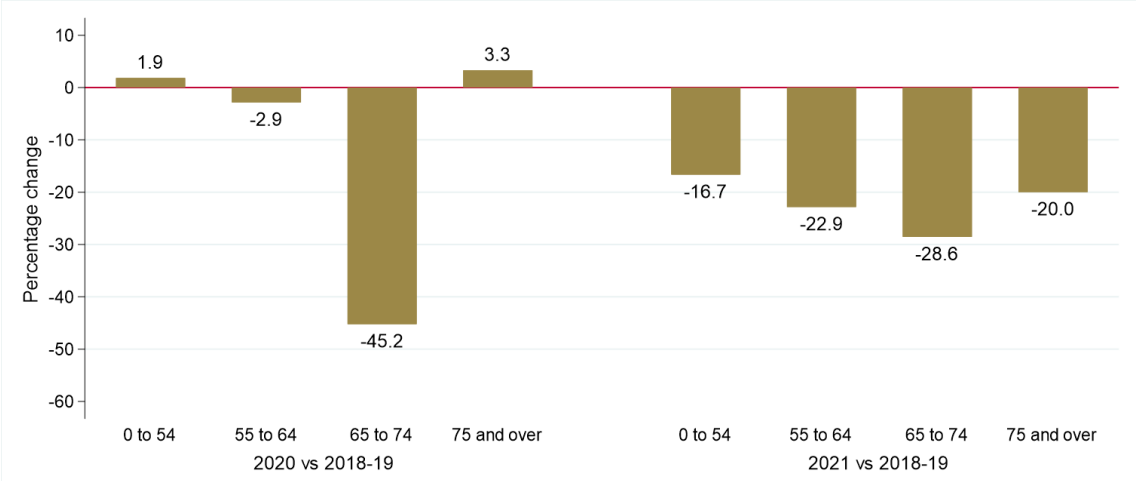
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 3: Number of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by age and period of diagnosis

(a) Number of cases diagnosed



(b) Percentage change over time in number of cases



HEALTH AND SOCIAL CARE TRUST

Excluding the first quarter of each year the number of cases of non-invasive brain tumours diagnosed among those resident in Northern HSCT decreased by 25.5% from 47 per year in 2018-2019 to 35 in 2021. Between the same two time periods the number of cases of non-invasive brain tumours diagnosed among those resident in Southern HSCT decreased by 17.9% from 28 per year in 2018-2019 to 23 in 2021. The change in case distribution by Health and Social Care Trust between 2018-2019 and 2021 was not statistically significant.

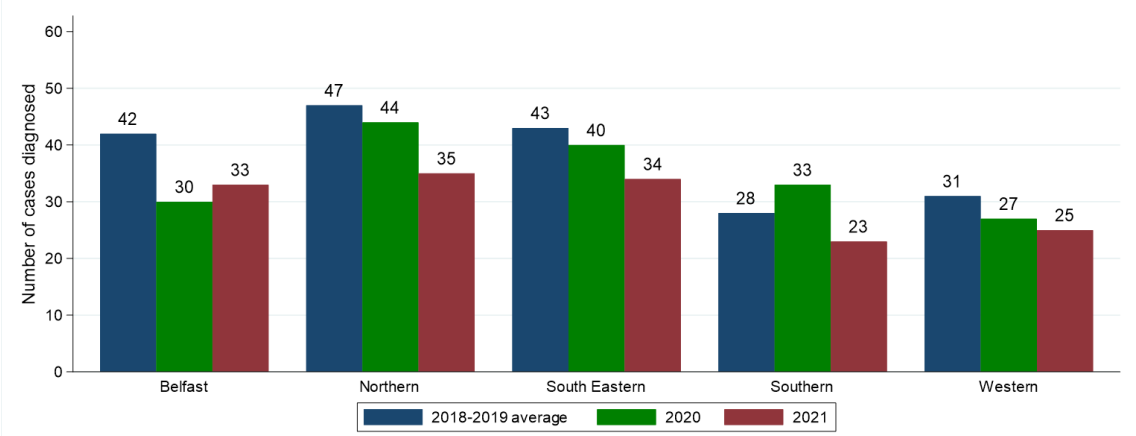
Table 4: Number and proportion of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

Health and Social Care Trust	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	190	174	150	-8.4%	-21.1%
Belfast	42 (22.1%)	30 (17.2%)	33 (22.0%)	-28.6%	-21.4%
Northern	47 (24.7%)	44 (25.3%)	35 (23.3%)	-6.4%	-25.5%
South Eastern	43 (22.6%)	40 (23.0%)	34 (22.7%)	-7.0%	-20.9%
Southern	28 (14.7%)	33 (19.0%)	23 (15.3%)	+17.9%	-17.9%
Western	31 (16.3%)	27 (15.5%)	25 (16.7%)	-12.9%	-19.4%

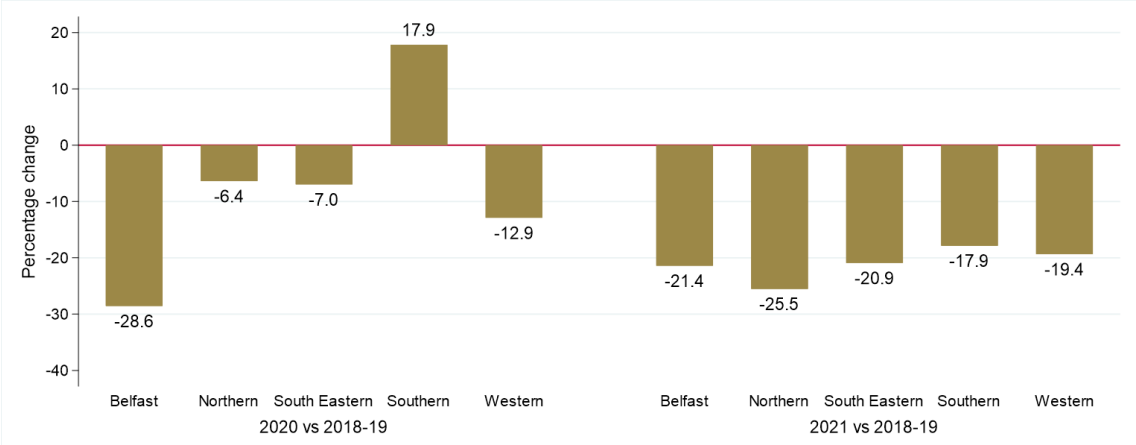
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown Health and Social Care Trust are included in totals.

Figure 4: Number of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

(a) Number of cases diagnosed



(b) Percentage change over time in number of cases



SOCIO-ECONOMIC DEPRIVATION

Excluding the first quarter of each year the number of cases of non-invasive brain tumours diagnosed among those resident in the least deprived quintile decreased by 18.2% from 33 per year in 2018-2019 to 27 in 2021. Between the same two time periods the number of cases of non-invasive brain tumours diagnosed among those resident in the most deprived quintile decreased by 2.9% from 34 per year in 2018-2019 to 33 in 2021. The change in case distribution by deprivation quintile between 2018-2019 and 2021 was not statistically significant.

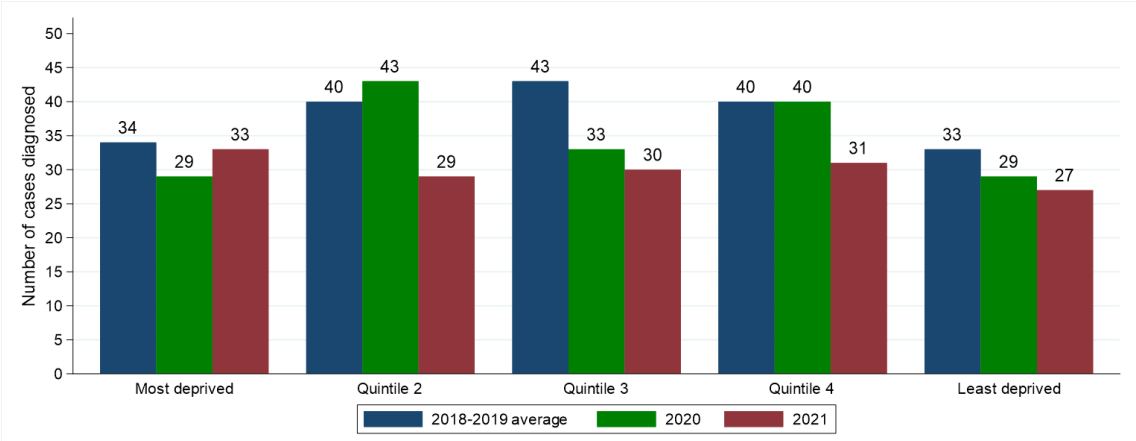
Table 5: Number and proportion of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

Deprivation quintile	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	190	174	150	-8.4%	-21.1%
Most deprived	34 (17.9%)	29 (16.7%)	33 (22.0%)	-14.7%	-2.9%
Quintile 2	40 (21.1%)	43 (24.7%)	29 (19.3%)	+7.5%	-27.5%
Quintile 3	43 (22.6%)	33 (19.0%)	30 (20.0%)	-23.3%	-30.2%
Quintile 4	40 (21.1%)	40 (23.0%)	31 (20.7%)	0.0%	-22.5%
Least deprived	33 (17.4%)	29 (16.7%)	27 (18.0%)	-12.1%	-18.2%

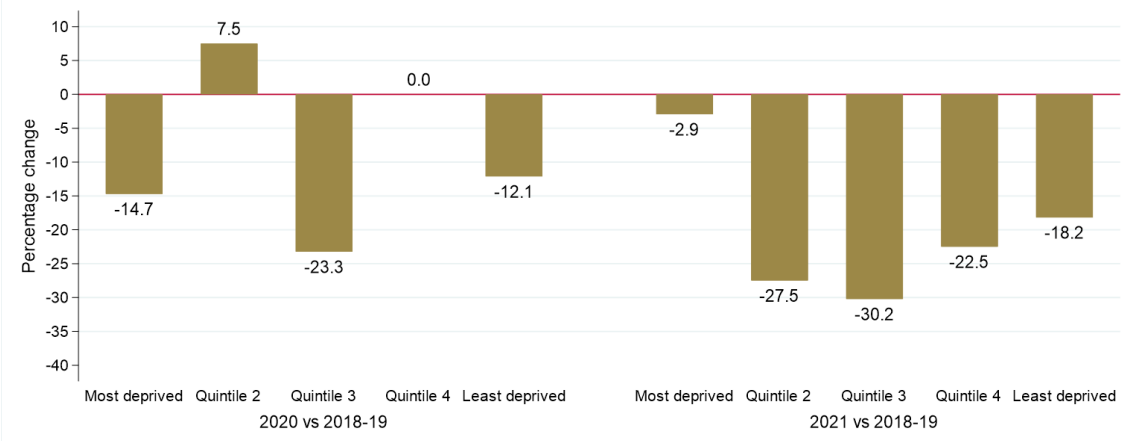
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown deprivation quintile are included in totals.

Figure 5: Number of non-invasive brain tumour cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

(a) Number of cases diagnosed



(b) Percentage change over time in number of cases



SURVIVAL

Changes in survival are evaluated using two measures. Observed survival examines the time between diagnosis and death from any cause. It thus represents what cancer patients experience, however, due to the inclusion of non-cancer deaths (e.g. heart disease), it may not reflect how changes in cancer care impact survival from cancer. Thus changes in age-standardised net survival are also examined. This measure provides an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It also assumes a standard age distribution thereby removing the impact of changes in the age distribution of cancer patients on changes in survival over time. While this measure is hypothetical, as it assumes patients can only die from cancer related factors, it is a better indicator of the impact of changes in cancer care on patient survival.

OBSERVED SURVIVAL

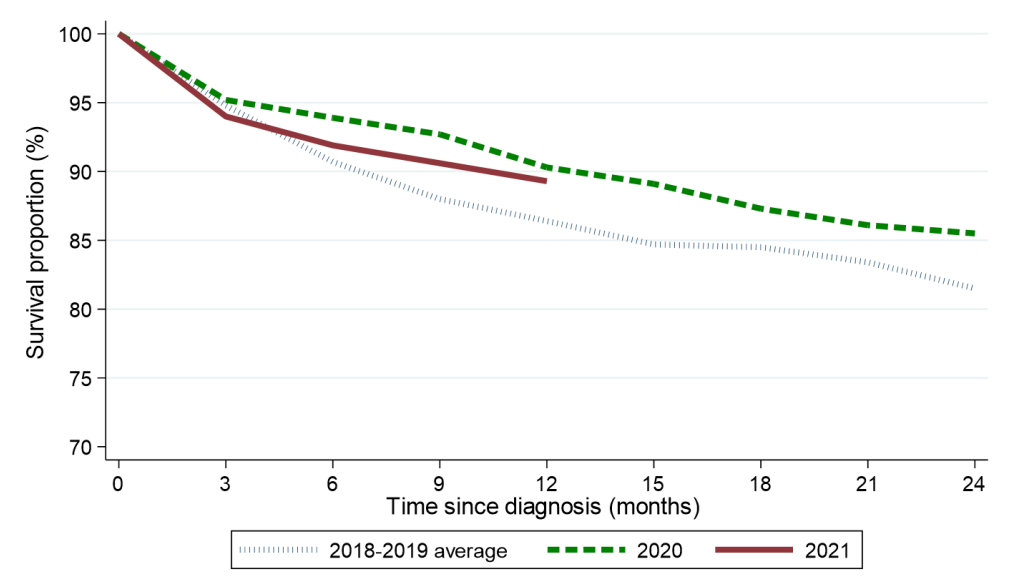
Survival among non-invasive brain tumour patients six months after diagnosis increased from 90.7% among those diagnosed in April-December of 2018-2019 to 91.9% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year survival increased from 86.4% to 89.3%. This change was not statistically significant. The log-rank test of equality indicates no statistically significant difference between the survival functions for 2018-2019 and 2021 (p=0.373).

Table 6: Observed survival for patients with a non-invasive brain tumour diagnosed in April-December of 2018-2021 by period of diagnosis

Survival time	Period of diagnosis (Apr-Dec)		
	2018-2019	2020	2021
Three months	94.8% (92.0% - 96.7%)	95.2% (90.5% - 97.5%)	94.0% (88.7% - 96.8%)
Six months	90.7% (87.3% - 93.3%)	93.9% (89.0% - 96.7%)	91.9% (86.3% - 95.3%)
One year	86.4% (82.4% - 89.5%)	90.3% (84.7% - 93.9%)	89.3% (83.1% - 93.3%)
Two years	81.5% (77.1% - 85.1%)	85.5% (79.1% - 90.0%)	-

No statistically significant reductions compared to 2018-2019

Figure 6: Observed survival for patients with a non-invasive brain tumour diagnosed in April-December of 2018-2021 by period of diagnosis



DEATHS FROM COVID-19

During 2021 there were a total of 16 deaths from Covid-19 among non-invasive brain tumour patients diagnosed at any point since 1993.

NET SURVIVAL

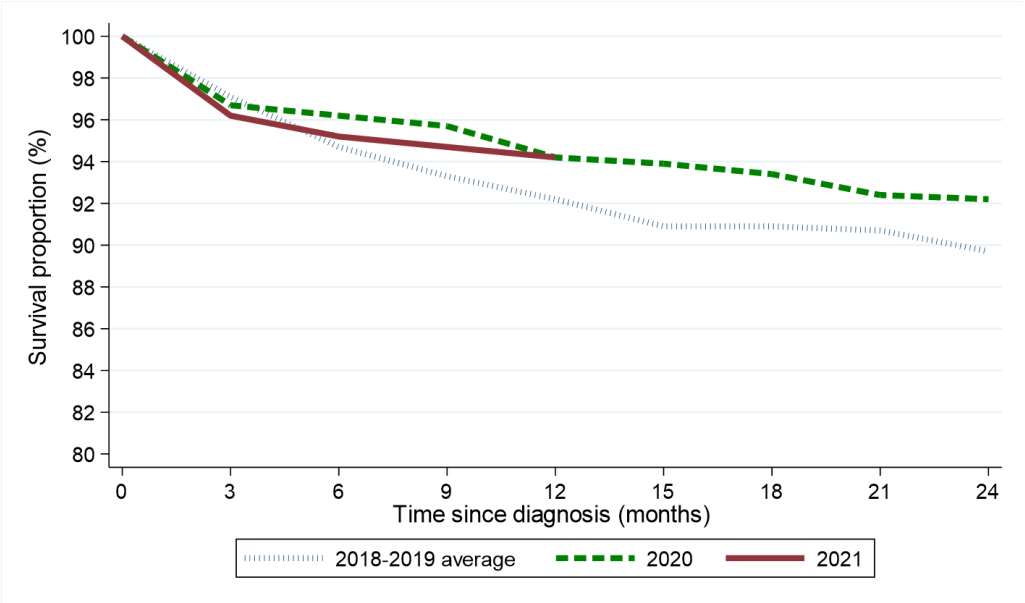
Net survival among non-invasive brain tumour patients six months after diagnosis increased from 94.7% among those diagnosed in April-December of 2018-2019 to 95.2% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year net survival increased from 92.2% to 94.2%. This change was not statistically significant.

Table 7: Age-standardised net survival for patients with a non-invasive brain tumour diagnosed in April-December of 2018-2021 by period of diagnosis

Survival time	Period of diagnosis (Apr-Dec)		
	2018-2019	2020	2021
Three months	97.1% (95.6% - 98.6%)	96.7% (94.3% - 99.2%)	96.2% (93.4% - 99.1%)
Six months	94.7% (92.7% - 96.8%)	96.2% (93.4% - 99.1%)	95.2% (92.1% - 98.4%)
One year	92.2% (89.5% - 95.0%)	94.2% (90.6% - 98.0%)	94.2% (90.6% - 98.0%)
Two years	89.7% (86.4% - 93.1%)	92.2% (87.6% - 97.0%)	-

No statistically significant reductions compared to 2018-2019

Figure 7: Age-standardised net survival for patients with a non-invasive brain tumour diagnosed in April-December of 2018-2021 by period of diagnosis



Note: All patients are followed up to the end of 2022. This enables calculation of two-year survival for patients diagnosed in 2018-2020, however only survival up to one year from diagnosis can be calculated for patients diagnosed in 2021.